

BATTERY CALCULATIONS
FAP-001-16

ITEM	DESCRIPTION	QTY	STANDBY CURRENT PER ITEM (AMPS)	TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER ITEM (AMPS)	TOTAL ALARM CURRENT PER ITEM
CP-35	FACP w/2ZN'S + AUD	1	0.1750	0.1750	0.5010	0.5010
PS-35	POWER SUPPLY	1	0.0000	0.0000	0.0000	0.0000
BC-35	BATTERY CHARGER	1	0.0450	0.0450	0.0300	0.0300
PM-32	MATRIX MODULE	1	0.0000	0.0000	0.0000	0.0000
SM-30	SWITCH MODULE	1	0.0000	0.0000	0.0450	0.0450
SR-35	8 RELAY MODULE	1	0.0000	0.0000	0.0210	0.0210
ZN-34US	SUPERVISORY MODULE	1	0.0100	0.0100	0.1100	0.1100
ZU-35	ZONE MODULE	2	0.0090	0.0180	0.1100	0.2200
ZU-35DS	ZONE MODULE/SD's	1	0.0090	0.0090	0.1100	0.1100
SMOKE	SMOKE DETECTOR	1	0.0001	0.0001	0.0010	0.0010
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	1	0.0020	0.0020	0.0000	0.0000
PS-5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						0.1000
TOTAL SYSTEM CURRENT			STANDBY	0.4171	ALARM	1.3130

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) + (TOT. ALARM CURRENT X ALARM TIME)} X 1.25

MIN. BATTERY CAPACITY = {(0.4171 A X 24 HR) + (1.3130 A X 0.083 HR)} X 1.25

MIN. BATTERY CAPACITY = {10.0104 Ahr + 0.109 Ahr} X 1.25 = 12.6492 Ahr

NOTIFICATION APPLIANCE CIRCUIT
VOLTAGE DROP & POWER REQUIREMENTS

CKT AV1 - BLDG 16				
DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM	
WHEELLOCK STROBE 15 cd	-	0.5010	0.0000	
WHEELLOCK HORN/STROBE 15cd	-	0.0000	0.0000	
WHEELLOCK STROBE 30 cd	-	0.0300	0.0000	
WHEELLOCK HORN/STROBE 30 cd	-	0.0450	0.0000	
WHEELLOCK STROBE 75 cd	-	0.0210	0.0000	
WHEELLOCK HORN/STROBE 75 cd	-	0.1100	0.0000	
WHEELLOCK STROBE 110 cd	-	0.1100	0.0000	
WHEELLOCK HORN/STROBE 110 cd	-	0.1750	0.0000	
WHEELLOCK HORN	-	0.0000	0.0000	
AUTOCALL BELL	2	0.0500	0.1000	
TOTAL NOTIFICATION APPLIANCES CURRENT			0.1000	

VOLTAGE DROP (VD) CALCULATIONS

VD = {(I) (D) (21.6)}/CM

WHERE: I = CIRCUIT CURRENT

D = CONDUCTOR LENGTH (FT) ONE WAY

21.6 = A CONSTANT

CM = CIRCULAR MILS

VD = {(0.1A) (80FT) (21.64)}/4110 = 0.042V

%VD = {0.042V / 24V} X 100 = 0.175%

REMAINING VOLTS = 23.958

WIRE SIZE	CIRCULAR MILS
12AWG	6530
14AWG	4110
16AWG	2580
18AWG	1620
20AWG	1020

FIRE ALARM SYSTEM
FUNCTION CHART

SYSTEM EVENT

	RESPONSE				
	ANNUNCIATE AT FACU	FIRE SIGNAL TO RECEIVER	TROUBLE SIGNAL TO LBNL RECEIVER	SUPERVISORY SIGNAL TO LBNL RECEIVER	OPERATE NOTIFICATION APPLIANCES
FIRE CALL BOX	●	●			●
FIRE SPRINKLER WATERFLOW SWITCH	●	●			●
FIRE SPRINKLER VALVE SUPERVISORY SWITCH	●			●	
AC POWER FAILURE	●		●		
SYSTEM FAULT	●		●		

	AS BUILT — — 09/16/13								BLDG 16 FIRE ALARM FUNCTION CHART & CALCULATIONS —	DRAWN BY	LDD	DATE	09/16/2013
										CHECKED BY	LDD	09/16/2013	
										APPROVED BY	MCD	09/16/2013	
										SCALE AS NOTED			
		—	LDD	LDD	MCD	09/16/13	AS BUILT		UNIVERSITY OF CALIFORNIA LAWRENCE BERKELEY NATIONAL LABORATORY FACILITIES DIVISION	DRAWING NO.	4B16E018_		SHEET
PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)	ISSUE (PROGRESS, ESTIMATE, BD, CONSTRUCTION, CONFORMED, REVISION, RECORD)	REVISION NUMBER	DRAWN BY	CHECKED BY	APPR'D BY	DATE	REMARKS			PROJECT NO.	000000	1 OF 1	